

Message Text

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ACTION EUR-12

INFO OCT-01 ISO-00 OES-07 PM-04 SS-15 FEA-01 ACDA-07
CIAE-00 INR-07 IO-13 L-03 NSAE-00 NSC-05 EB-07
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-----112209Z 029024 /12
R 112111Z MAY 77
FM USMISSION OECD PARIS
TO SECSTATE WASH DC 6597

C O N F I D E N T I A L SECTION 01 OF 02 OECD PARIS 13966

PASS STATE FOR NYE, NOSENZO; ERDA FOR SIEVERING,
GIAMBUSSO, VANDERRYR, CUNNINGHAM, BEKJORD

E.O. 11652: GDS
TAGS: TECH, OECD
SUBJECT: INDIAN LMFBR DEVELOPMENT

1. BEGIN SUMMARY: INDIAN PROGRESS TOWARDS A BREEDER REACTOR ECONOMY BASED UPON A U-233/THORIUM FUEL CYCLE IS DESCRIBED. WHILE OF OBVIOUS TECHNICAL INTEREST, THIS PROGRAM HAS POTENTIAL POLITICAL MEANING IN VIEW OF U.S. NON-PROLIFERATION POLICY. END SUMMARY.

2. AS SUGGESTED IN THE ERDA KEY STAFF ATTENDANCE PLAN, THE OECD SCIENCE ADVISOR FOR ENERGY R&D AND TECHNOLOGICAL MATTERS ATTENDED THE TECHNICAL SESSIONS ON RAW MATERIALS AND FUEL TECHNOLOGY AT THE SALZBURG NUCLEAR FUEL CYCLE CONFERENCE. AT THESE SESSIONS AND ALSO AT ONE DEALING WITH NUCLEAR POWER IN DEVELOPING COUNTRIES, REPRESENTATIVES OF THE DEPARTMENT OF ATOMIC ENERGY OF INDIA PRESENTED PAPERS ON THEIR NUCLEAR POWER PROGRAM WHICH EMPHASIZED THE FUTURE ROLE OF THORIUM IN THE PRODUCTION OF NUCLEAR ENERGY IN THEIR COUNTRY. THORIUM UTILIZATION WAS IN THE CONTEXT OF THE NATION'S DESIRE FOR SELF-RELIANCE.

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3. MISSION BELIEVES IT USEFUL TO REVIEW WHAT IS KNOWN OF INDIAN ACTIVITIES IN THIS FIELD, PARTICULARLY IN RELATION TO THE ON-GOING, BUT SELDOM DISCUSSED, PROGRAM ON LMPBR DEVELOPMENT. THIS LATTER EFFORT NOW GAINS ADDED SIGNIFICANCE IN RELATION TO U.S. NON-PROLIFERATION OBJECTIVES.

4. INDIAN INTEREST IN THORIUM UTILIZATION IS BASED UPON ITS VAST THORIUM RESERVES AND COMPARATIVELY LOW KNOWN URANIUM RESOURCES. ACCORDING TO ONE ESTIMATE, INDIA HAS ON THE ORDER OF ONE HALF OF THE WORLD'S 1.25 MILLION TONS OF REASONABLY ASSURED THORIUM RESOURCES (AT LESS THAN \$10 PER POUND). THUS, INDIA CAN AND IS PROCEEDING WITH A STRATEGY OF NUCLEAR POWER DEVELOPMENT BASED UPON A THORIUM FUEL CYCLE. THIS PROGRAM CONTAINS SIGNIFICANT POTENTIAL FOR SELF SUFFICIENCY. A THREE PHASE STRATEGY WAS DESCRIBED AT SALZBURG. THE FIRST PHASE IS BASED UPON NATURAL URANIUM FUEL; THE SECOND ON THE UTILIZATION OF PLUTONIUM IN BREEDER REACTORS USING DEPLETED URANIUM AND/OR THORIUM AS FERTILE MATERIAL; AND A FINAL PHASE ON THORIUM BREEDERS USING U-233 AND CONVERSION OF THORIUM.

5. THE FIRST PHASE IS CURRENTLY UNDERWAY AND WAS DISCUSSED EXTENSIVELY AT THE SALZBURG MEETING. THE SECOND PHASE, WHICH WAS NOT MENTIONED AT ALL, IS IN ITS INITIAL STAGE. ALTHOUGH DETAILS OF THIS PROGRAM ARE EXCEEDINGLY DIFFICULT TO OBTAIN, IT IS BASED UPON OPERATION OF A RAPSODIE-TYPE LMFBF REACTOR WHICH WAS SOLD TO INDIA SEVERAL YEARS AGO BY FRANCE. FRANCE IS SIGNATORY TO AN AGREEMENT TO PROVIDE ASSISTANCE IN THE CONSTRUCTION OF THIS PLANT WHICH IS ALMOST A REPLICA OF THE FRENCH TESTING REACTOR LOCATED AT CADARACHE. WHEREAS THE FRENCH REACTOR IS USED FOR TESTING BREEDER

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FUEL, THE INDIAN VERSION WILL INCORPORATE A STEAM GENERATOR FOR ELECTRICAL POWER PRODUCTION. CRITICALITY WAS ORIGINALLY SCHEDULED FOR 1978 BUT RECENT INFORMATION INDICATES THAT 1980-81 MAY BE MORE PROBABLE. IT HAS BEEN REPORTED THAT THE PROGRAM INVOLVES THE USE OF THORIUM (PROBABLY AS U-TH OXIDE) WHICH IS CONSISTENT WITH THE KNOWN INDIAN DEVELOPMENT PROGRAM IN THIS AREA. IT IS NOT CLEAR WHETHER

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SUFFICIENT PLUTONIUM WILL BE AVAILABLE FOR THE CORE OR
WHETHER U-235 IS CONTEMPLATED.

6. THE ABOVE INFORMATION INDICATES RELATIVELY RAPID
INDIAN PROGRESS TOWARDS A BREEDER REACTOR SYSTEM
WHICH IS INTENDED TO BE BASED, AT LEAST IN ITS FINAL
STAGE, UPON A U-233/THORIUM FUEL CYCLE. THIS PROGRAM
HAS OBVIOUS TECHNICAL INTEREST BUT EQUALLY SIG-
NIFICANT AND ALTHOUGH OBVIOUSLY NOT ORIGINALLY INTENDED
AS SUCH, HAS POTENTIAL POLITICAL MEANING IN THAT IT
CAN BE VIEWED AS BEING CONSISTENT WITH CURRENT U.S.
NON-PROLIFERATION POLICIES EVEN THOUGH IT MAY UTILIZE
HIGHLY ENRICHED URANIUM OR PLUTONIUM IN ITS EARLY
PHASES.

7. ON A SEPARATE BUT RELATED SUBJECT, IN CONNECTION
WITH THE APRIL 5 MEETING OF ERDA STAFF CALLED BY
NELSON SIEVERING TO DISCUSS REACTIONS TO U.S. NUCLEAR
POLICY, THE OECD SCIENCE ADVISOR FOR ENERGY R&D MET
WITH THE HEAD OF THE SAFETY PROGRAM OF THE MEXICAN
NUCLEAR ENERGY INSTITUTE. OPPOSITION TO U.S. NUCLEAR
OBJECTIVES CONNECTED WITH REPROCESSING AND BREEDER
REACTORS WAS EXPRESSED. THIS DISSATISFACTION WAS NOT
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TECHNICAL IN SUBSTANCE BUT, RATHER, WAS BASED UPON
CONCERNS THAT THE U.S. WAS DICTATING NUCLEAR POLICY
AND IN PUBLIC AS WELL.
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